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Spectra and pseudospectra

ABSTRACT. Eigenvalues are amongst the most useful tools of mathematics: they permit diagonalization of matrices, they describe asymptotics and stability, they give a matrix personality. However, when the matrix in question is not normal, standard eigenvalue analysis is only partially applicable and can even be misleading. The first part of this talk will be a brief introduction to the theory of pseudospectra, a refinement of standard spectral theory which has proved successful in applications concerning non-normal matrices. In the second part of the talk we shall focus on the following basic question: do pseudospectra determine matrix behaviour?